Hammer Stores (PWS 3380036)
SOURCE WATER ASSESSMENT REPORT

RGT 03-29-04

May 07, 2004

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality (DEQ) is completing the assessments for all Idaho public drinking water systems. The assessment for the Hammer Stores drinking water source is based on a land use inventory within a 1,000 foot radius of the well source, sensitivity factors associated with the source, and characteristics associated with either your aquifer or watershed in which you live. This report, Source Water Assessment for Hammer Stores (PWS # 3380036) describes the public drinking water system, the associated potential contaminant sources located within a 1,000 foot boundary around the drinking water source, and the susceptibility that may be associated with any associated potential contaminants. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this system. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the Hammer Stores water system.**

The Hammer Stores is located approximately two miles south of Fruitland on Highway 95 in Payette County (see Figure 1). The non-community transient water system has one well located south of the store. Water quality tests conducted for the well during 2003 do not show levels of chemicals above maximum contaminant levels (MCL). However, there have been detections of nitrate within the sampled well water. The highest nitrate level of water samples taken from the well was 7.17 mg/L in December of 2003. The lowest detection of nitrate from water samples taken from the well was 3.31 mg/L in March of 2003. The nitrate concentrations are both below the EPA MCL of 10 mg/L for nitrate. However, water system operators are required to include any detections of ½ of the MCL into their yearly Consumer Confidence Report. Hammer Stores should maintain an awareness of this potential issue.

The final susceptibility ranking for the well is high for inorganic chemicals (IOC), volatile organic chemicals (VOC), synthetic organic chemicals (SOC), and microbial contaminants (see Table 2). A copy of the susceptibility analysis for the Hammer Stores well along with a map showing potential contaminant sources are included with this summary. Information regarding the potential contaminants within the 1,000-foot boundary have been summarized and included in Table 1.

Potential Contamination

The potential contaminant sources identified within the delineated area include an auto repair/wrecker service, an army equipment sales business, a restaurant, a drainfield and stormwater runoff ditch, a fire protection tank, a seasonal canal, a septic system, Interstate 84, and Highways 95 and 30 (see Table 1 and Figure 2). If an accidental spill occurred on the highways or Interstate 84 IOC constituents (e.g. nitrate), VOC constituents (e.g. petroleum products), SOC constituents (e.g. pesticides), and microbial contaminants (e.g. bacteria) could be added to the ground water. The auto repair/wrecker service and army equipment sales could be a potential source of IOC, VOC, and SOC contaminants. The drainfield, stormwater runoff ditch,

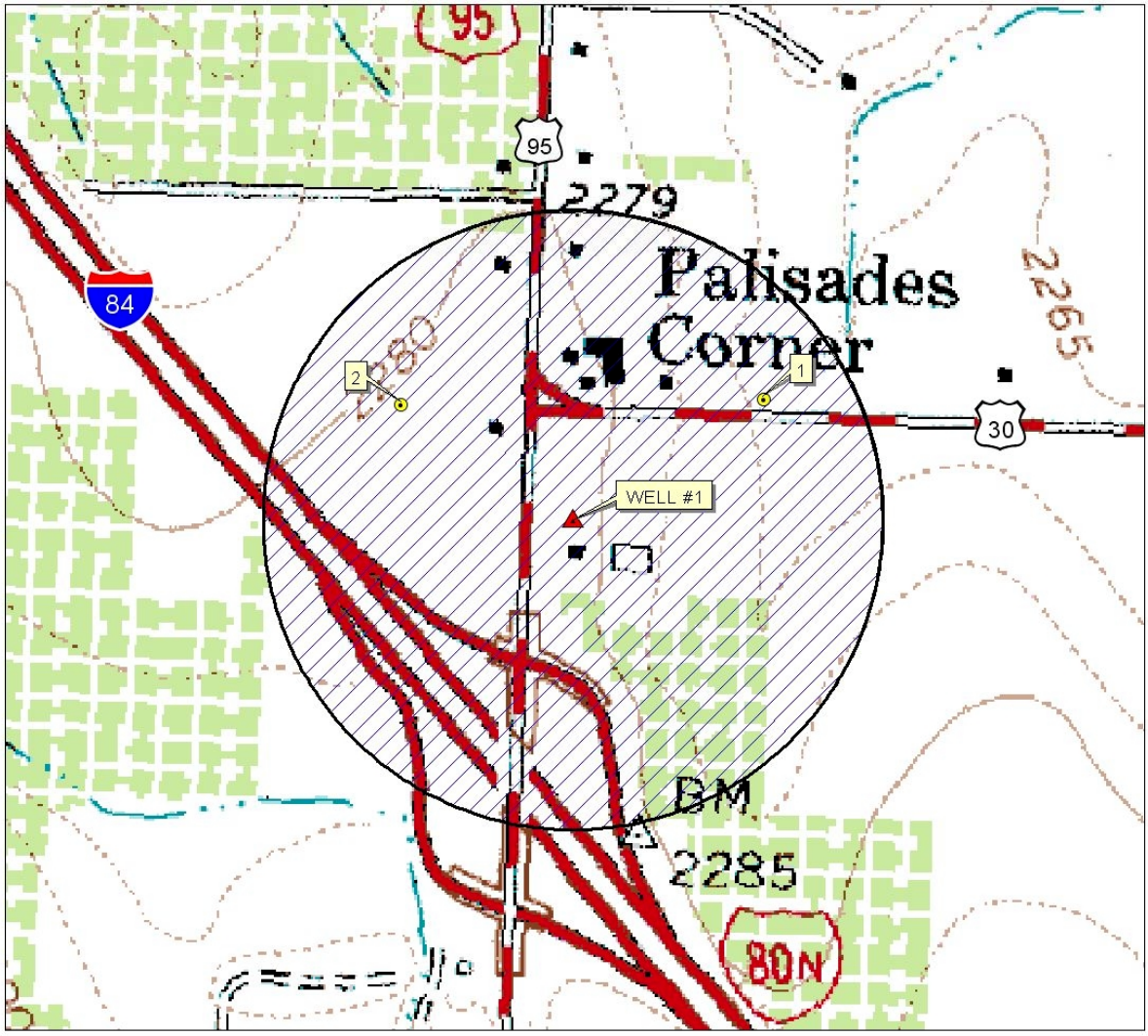
and seasonal canal could be a potential source of IOC, VOC, SOC, and microbial contaminants. The septic system is a possible source of IOC and microbial contaminants, while the restaurant has the potential to introduce IOC contaminants into the drinking water supply. The fire protection tank is a potential source of VOC and SOC contaminants.

Table 1. Hammer Stores Potential Contaminant Inventory

Map ID	Source Description	Source of Information	Potential Contaminants[1]
1	Auto Repair/Wrecker Service	Database Search	IOC, VOC, SOC
2	Army Equipment Sales	Database Search	IOC, VOC, SOC
	Interstate 84	GIS Map	IOC, VOC, SOC, M
	Highway 95	GIS Map	IOC, VOC, SOC, M
	Highway 30	GIS Map	IOC, VOC, SOC, M
	Restaurant	GWUDI Field Survey	IOC
	Drainfield	GWUDI Field Survey	IOC, VOC, SOC, M
	Stormwater runoff ditch	GWUDI Field Survey	IOC, VOC, SOC, M
	Fire Protection Tank	GWUDI Field Survey	VOC, SOC
	Seasonal Canal	GWUDI Field Survey	IOC, VOC, SOC, M
	Septic System	GWUDI Field Survey	IOC, M

[1]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical, M= microbial

Figure 2. Hammer Stores Delineation Map and Potential Contaminant Source Locations



0 0.1 0.2 0.3 Miles

Legend

Time of Travel Zone
- 0-3 Year

- Wellheads (PWS)
- Toxics Release Inventory - 1998
- CERCLA SITES
- RCRA Sites
- Business Mailing List
- AST Locations
- Recharge Points
- Deep Injection Wells
- Group 1 Sites

Dairy Locations
- Active
- Proposed

UST Sites
- Closed
- Open
- SARA Title III Sites
- LUST Sites
- NPDES Locations
- Cyanide Sites
- LandFills
- Waste Water Land App
- Mine Locations

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IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

PWS# 3380036
Well #1

Susceptibility Analysis

The susceptibility of the drinking water source to contamination was ranked as either high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity or system construction, the land use characteristics, and potentially significant contaminant sources. Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in another category(ies) results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, IOC (e.g. nitrates, arsenic) contaminants, VOC (e.g. petroleum products) contaminants, SOC (e.g. pesticides) contaminants, and microbial contaminants (e.g. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each drinking water source is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement.

The hydrologic sensitivity was rated high for the well. This rating is based upon moderate-to-well drained soil characteristics defined by the Natural Resource Conservation Service. The well log describes the presence of clay layers with a cumulative thickness of 14 feet in the subsurface to provide a low-permeability barrier between possible surface contaminants and the water-producing zone. This is less than the required 50 feet cumulative thickness identified in the SWA Plan (DEQ, 1999) to lower the sensitivity ranking. In addition, the depth to first ground water identified was at 45 feet below ground surface (bgs), less than the 300 feet identified in the SWA Plan (DEQ, 1999) required to achieve a lower score. Water was also present between 80 and 90 feet bgs in brown clay and sand streaks and is considered the main water-bearing zone. However, the vadose zone (the area between the ground surface and the saturated portion of the aquifer) is mainly comprised of sand and clay, which lowers the sensitivity rating for the well as identified in the SWA Plan (DEQ, 1999).

The well's system construction was rated moderate. The well was drilled in September of 1999 to a depth of 104 feet bgs. The static water level at the time of drilling was 36 feet bgs. The well has a 6-inch diameter casing from the surface to 79 feet bgs. The well has a 5-inch diameter casing from 79 feet to 83 feet and 5-inch screen from 83 feet bgs to 103 feet bgs, which does not meet required minimum well diameter of six inches (IDWR, 1993). The well's bentonite annular seal at the ground surface extends 45 feet bgs into water-bearing sand and clay, which is less than the required 65 feet bgs into the confining brown clay layer to lower the system construction rating (IDWR, 1993). The top of the production zone is at 83 feet, and is 47 feet below the static water level, less than the required 100 feet identified in the SWA Plan (DEQ, 1999) to lower the system construction rating. According to the 1999 sanitary survey, the wellhead is safe from flooding, the casing is 29 inches above ground, and the sanitary seal is in good condition. The well is not located within a 100-year floodplain.

The Hammer Stores rated high (Table 2) for potential contaminant sources and land use for VOCs (e.g., petroleum products), IOCs (e.g., nitrates), SOCs (e.g., pesticides), and microbial contamination (e.g., total coliform). The drainfield, stormwater runoff ditch, Interstate 84, Highways 95 and 30, and the season canal added to the high rankings for VOCs, IOCs, SOCs, and microbial contamination. The auto repair/wrecker service, and army equipment sales business contributed to the high rating for IOCs, VOCs, and SOCs. The fire protection tank added to the VOCs and SOCs high ranking, while the septic system added to the ranking of the IOCs and microbial contaminants. The restaurant increased the IOC ranking. In addition, the land use in this area is predominantly irrigated agriculture, which increased the ranking for all four potential contaminant categories. The county nitrogen fertilizer use is high and the Hammer Stores well is located within a nitrate priority, both of these facts increased the ranking of the IOCs.

The final susceptibility ranking for the well is high for IOC, VOC, SOC, and microbial contaminants (see Table 2). A copy of the susceptibility analysis for the Hammer Stores well along with a map showing potential contaminant sources are included with this summary. Information regarding the potential contaminants within the 1,000-foot boundary have been summarized and included in Table 1.

Table 2. Summary of the Hammer Stores Susceptibility Evaluation

	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory[2]				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbial		IOC	VOC	SOC	Microbial
Well	H	H	H	H	H	M	H	H	H	H

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility
[2]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical, M= microbial

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

Protection Activities

For the Hammer Stores water system, drinking water protection activities should focus on evaluating possible sources of contamination such as those identified in this assessment, and other sources identified by the well operator. To protect the source water, the water system operator may consider installing a locking fence around the wellhead to restrict direct access. During runoff periods, the canal and drainfields should be monitored to prevent surface water from infiltrating the well water. Working with the local soil and conservation district and Payette County will better inform the water system operator of chemicals that may be applied or stored near the drinking water well. The water system operator is also encouraged to develop a

drinking water protection plan to document and rank potential contaminant sources, assess protection efforts, and provide education for staff and the public about the drinking water. The water system operator should be aware of the nitrate detections over ½ of the MCL, and focus on eliminating or reducing potential nitrate contaminants.

Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. There are transportation corridors near the delineations; therefore the Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

Assistance

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact Pamela Smolczynski in the Idaho Department of Environmental Quality Boise Regional Office at (208) 373-0461.

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper, Idaho Rural Water Association, at 208-343-7001 (mlharper@idahoruralwater.com) for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few heads to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of storm water runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (IDEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25% of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RCRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by IDEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory

References Cited

Idaho Department of Environmental Quality, 1999. Source Water Assessment Plan.

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

The final scores for the **Hammer Stores** susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

> 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : Hammer Stores Well# : WELL
Public Water System Number 3380036 3/18/04 1:55:42 PM

1. System Construction		SCORE				
Drill Date	9/24/99					
Driller Log Available	YES					
Sanitary Survey (if yes, indicate date of last survey)	YES	1999				
Well meets IDWR construction standards	NO	1				
Wellhead and surface seal maintained	YES	0				
Casing and annular seal extend to low permeability unit	NO	2				
Highest production 100 feet below static water level	NO	1				
Well located outside the 100 year flood plain	YES	0				
Total System Construction Score		4				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	NO	2				
Vadose zone composed of gravel, fractured rock or unknown	NO	0				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	NO	2				
Total Hydrologic Score		5				
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score	
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2	
Farm chemical use high	YES	2	0	0		
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO	
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	2	2	
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES	10	9	9	7	
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8	
Sources of Class II or III leacheable contaminants or	YES	10	7	7		
4 Points Maximum		4	4	4		
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0	
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4	
Total Potential Contaminant Source / Land Use Score - Zone 1B		18	16	16	12	
Cumulative Potential Contaminant / Land Use Score		6	5	5	5	
4. Final Susceptibility Source Score		15	14	14	14	
5. Final Well Ranking		High	High	High	High	